CT Dose Probes and Phantoms
CT Dose Probes

The intended use of these probes, with the appropriate phantom, is to measure exposure produced by Computed Tomography (CT) scanners.

Model 6000-100 CT Dose Probe consists of a pencil-type ionization chamber with a sensitive length of 10 cm and an active volume of 3.2 cm^3.

Model 6000-200 CT Dose Probe consists of a pencil-type ionization chamber with a sensitive length of 10 cm and an active volume of 10 cm^3. This larger active volume greatly improves signal strength to over three times that of a typical 3 cm^3 CT probe. The outside diameter of the 6000- 200 chamber is 12.7 mm in diameter, requiring no adapter to fit into existing CT dose phantoms.

Both probes feature a 0.9 meter flexible, low-noise cable which is terminated in a male BNC coaxial connector for signal and a banana plug for bias. A triaxial BNC or TNC termination is available on request.

The 6000-100 and 6000-200 CT Dose Probes are designed specifically to read out on the Fluke Model 8000 NERO®mAx x-ray beam analyzer; but with an appropriate connector or adapter, it can be used with any high-quality dosimetry electrometer. When the 6000-100 and 6000- 200 are used with the Model 4000+ and 4000M+ x-ray beam analyzers, or the RAD-CHECK® PLUS, appropriate correction factors must be applied.

Specifications

	6000-100	6000-200
Sensitive length:	10.0 cm	10.0 cm
Nom. volume:	3.2 cc	10.0 cc
Nom. sensitivity:	0.1 nC/R.cm	0.32 nC/R.cm
Intensity limit (300V bias, 1% recombination loss):		
Continuous beam:	81R/s	31.6R/s
Pulsed beam:	51.5 mR/pulse	15.8 mR/pulse
Chamber o.d.:	7.4 mm	12.7 mm
Chamber i.d.:	6.4 mm	11.4 mm
Chamber wall:	polystyrene	acrylic
Wall density:	54 mg/cm^2	77 mg/cm^2
Phantom adapter:	1.27 cm dia.	none required

Common Specifications

Electrode: ..... 1100 aluminum
Energy response: ..... ±5%, 1 mm Al to 10 mm Al HVL
Axial response: ..... ±3% over central 9 cm active length
Beam orientation: ..... normal to chamber axis
Standard calib.: ..... 100 kVCP, 5.5 mm Al HVL (NIST M100)
Leakage: ..... <10^{-13}A at 10 min. polarization time,
..... <10^{-14}A at 2 hour polarization time
Cable length: ..... 0.9 meters (3 ft)
Cable termination:
Signal: ..... coaxial BNC
Bias: ..... banana plug
(triax BNC or TNC optional)

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Model 007
CT Dose Phantom Set

Features:

- Usable on all CT scanners
- Made from solid acrylic (PMMA)
- Unique nested compact design saves 3.3 kg of weight
- Rugged foam-lined carrying case is included

Model 007 CT Dose Phantom is manufactured to comply with the Food and Drug Administration's performance standard for diagnostic x-ray systems, which includes regulations specifically applicable to CT systems (21CFR1020.33)

Model 007 employs a nested design that saves 3.3 kg of weight for portability. All components are packaged in a rugged foam-lined carrying case.

Head phantom is 14 cm thick, 16 cm in diameter, with five 13.1 mm chamber holes, one in center, four around periphery, 90° apart, 1 cm from the edge. It includes five hole plugs.

Body phantom is 14 cm thick, 32 cm in diameter, with four 13.1 mm chamber holes around periphery, 90° apart, 1 cm from the edge. A 16 cm diameter hole in the center accepts the head phantom, which completes the phantom for body dose measurements. Four acrylic hole plugs are included.

Specifications

Material:	acrylic (PMMA)
Thickness:	14 cm
Head phantom diameter:	16 cm (6.3 in)
Body phantom diameter:	32 cm
Chamber holes:	nine, 1.31 cm diameter
Hole plugs:	nine, acrylic, 1.3 cm diameter 14 cm long
Weight without case:	13.3 kg (22 lbs)

Recommended ion chambers

6000-100	3.3 cc, 10 cm long, 7.4 mm O.D., includes adaptor sleeve
6000-200	10 cc, 10 cm long, 13 mm O.D., no adaptor is needed

Both chamber types have coaxial BNC and banana plug connection. Triaxial BNC is also available.

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